

We claim:

1. A relay processing apparatus (200) for relaying communications between a control program (250) that generates control commands for a terminal (100) and a process for an HTTP server program (210) that returns to said terminal a command constituting an HTTP response to a HTTP request received from said terminal, comprising:

    a terminal request processor (220) for initiating said control program (250) upon the reception of a function call from said HTTP server program (210) that initially received said HTTP request from the terminal; and

    a control request processor (230) for receiving from said control program (250) a first command generated as a response to the function call, and for transmitting to said terminal request processor a notification (S350) that said first command has been received,

    means in the terminal request processor responsive to the reception notification, for returning the first command to said HTTP server program (S380), and means in the HTTP server program for returning said command (S390) to the terminal in said HTTP response issued for said HTTP request.

2. A relay processing apparatus according to claim 1 further comprising means in the terminal for transmitting to the HTTP server program a second HTTP request that includes results from the first command, means in the control request processor for transmitting the results from the first command to the control program, and means in the control program for performing a process corresponding to said results from the first command.

3. A relay processing apparatus according to claim 1, wherein said terminal request processor further comprises means responsive to the function call from said HTTP server program for shifting said terminal request processor into a halted state while maintaining an execution state after transmitting the function call to the control program; and means responsive to said reception notification from said control request processor for recovering from said halted state and returning processing control and the first command to said HTTP server program.

4. A relay processing apparatus according to claim 1, wherein said control request processor further comprises means for transmitting said reception notification to said terminal request processor and means for shifting into a halted state while maintaining an execution state; and means responsive to a following second function call from the HTTP server program for recovering from said halted state and returning processing control to said control program.

5. A relay processing apparatus according to claim 1, wherein said terminal request processor further comprises means responsive to a non-receipt of said reception notification from said control request processor within a predetermined period of time for causing the HTTP server program to transmit an HTTP failure response to the terminal.

6. A relay processing apparatus according to claim 1,

wherein the function call is a certification request message for requesting the preparation of an electronic certificate that authenticates said terminal and the terminal request processor receives the function call from said HTTP server program and initiates the process employed by said control program to prepare said electronic certificate;

in accordance with a command received from said control program, said control request processor comprises means to transmit a signature addition command to said terminal containing an electronic signature.

7. The apparatus of claim 6 wherein the terminal request processor further comprises means for receiving a second function call containing a certification request message and an electronic signature from said HTTP server program as a response by the terminal to said signature addition command, and means for forwarding a notification to that effect to said control request processor;

means in the control request processor responsive to the notification of receipt of the second function call for transmitting said certification request message to said control program; and

means in said terminal request processor for transmitting an electronic certificate received from said control program.

8. A method for controlling a relay processing apparatus, for relaying communications between a process for a control program that generates control commands for a terminal and a process for an HTTP server program that returns, to said

terminal, a command constituting an HTTP response to a HTTP request received from said terminal, comprising:

a terminal request processing step of initiating said process performed by said control program upon the reception of a function call from said HTTP server program that initially received said HTTP request;

a control request processing step of receiving from said control program a command corresponding to a function call, and for transmitting a notification that said command has been received; and

a step of, when said reception notification is received, the processing is returned to said HTTP server program from said function call issued at said terminal request processing step, and of returning said command included in said HTTP response issued for said HTTP request.

9. A terminal control server for controlling a terminal through a network, comprising:

a terminal request processor for initiating a process for a control program that generates control commands for said terminal and a process for an HTTP server program that returns, to said terminal, a command constituting an HTTP response to a HTTP request received from said terminal, and for initiating a process for said control program upon the reception of a function call from said HTTP server program that initially received said HTTP request; and

a control request processor for receiving from said control program a command corresponding to a function call, and for transmitting to said terminal request processor a notification that said command has been received, wherein, when said reception notification is received,

said terminal request processor is permitted to return the processing to said HTTP server program, and said HTTP server program is permitted to return said command included in said HTTP response issued for said HTTP request.